The Access Grid:
An Open Collaboration Framework

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Introduction

- ## The AccessGrid is:
  - software for collaboration over the Internet, using audio, video, and text as a foundation
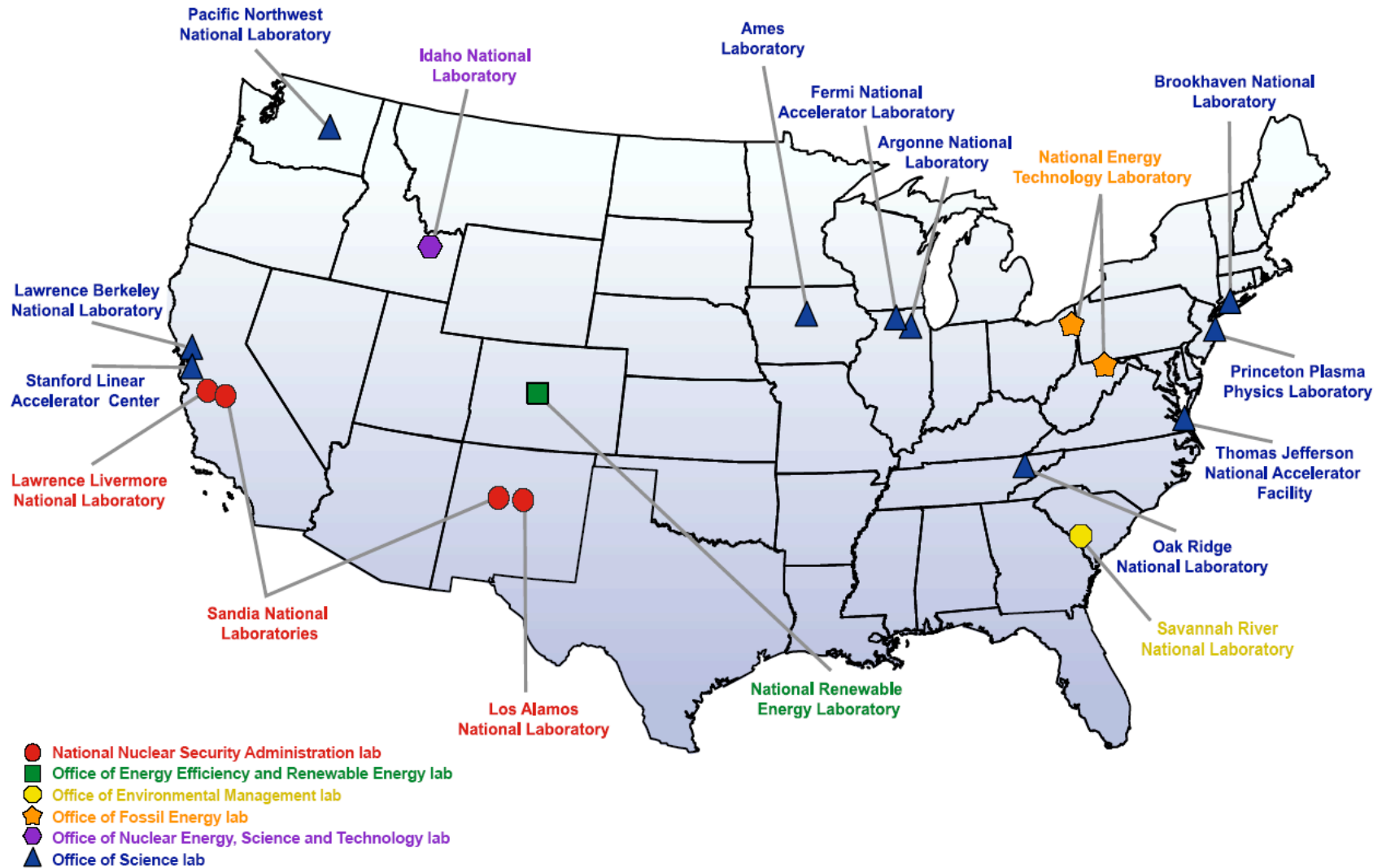 - a toolkit for developing collaborative applications

Why build AG?

- Group-to-group collaboration
  - 2 to 20 persons per site
  - Up to 20 sites should be possible
- Comfortable interaction
- Rich communication
- Scientific collaboration
  - National Laboratories
  - Universities
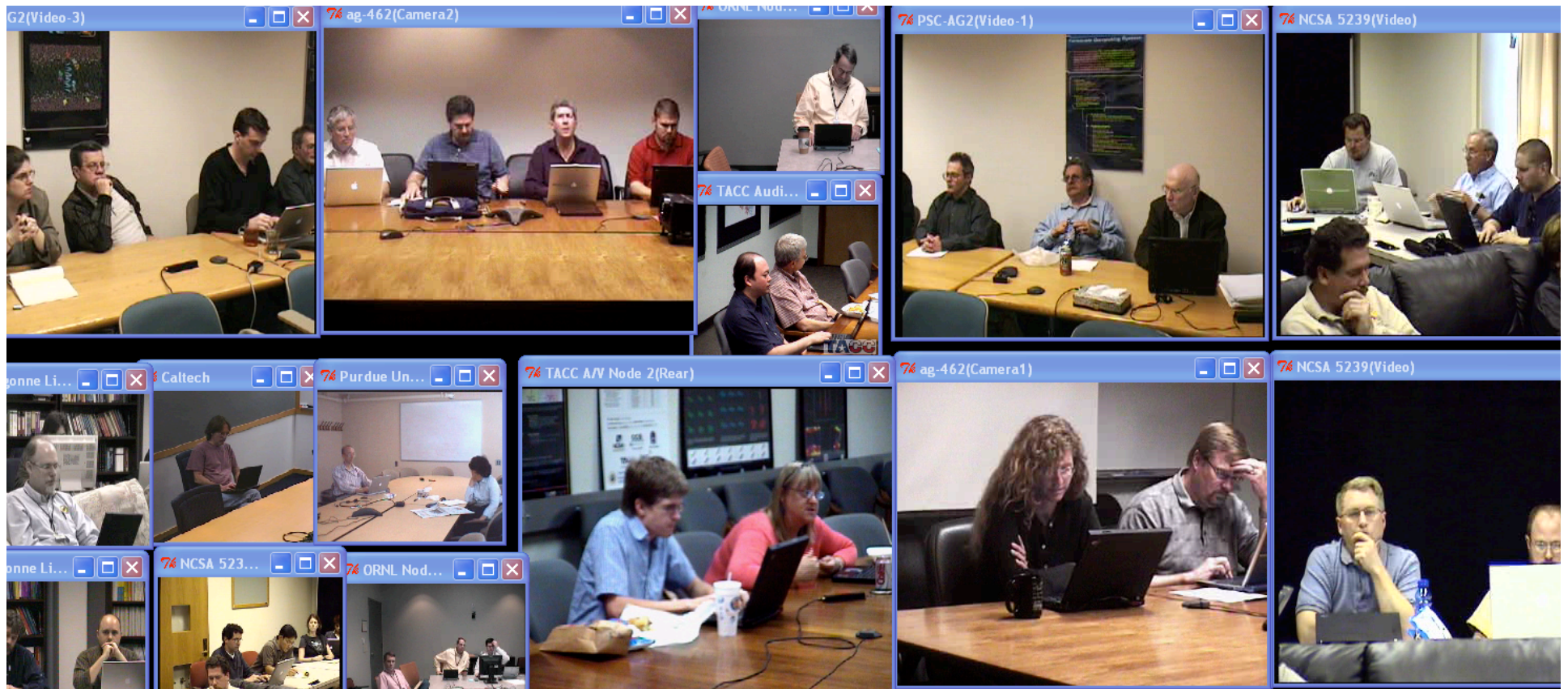 - Partners spread around the world

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AG Meeting Image

AG2

- Goals
  - Scalability
    - Many users, many servers
  - Supportability
  - Richness
    - Media, interaction
  - Security
    - Confidentiality
    - Authorization
  - Collaboration framework
    - Support collaborative tools development
  - Integration with Grid infrastructure
    - Access to compute, data resources
 - Open license

AG2

- Globus/SOAP-based collaboration toolkit
  - Globus well-concealed
- Group-to-group collaboration software
- Click-through installers
- VenueServer
  - Included in base install
  - Simple to run
  - Management tools included
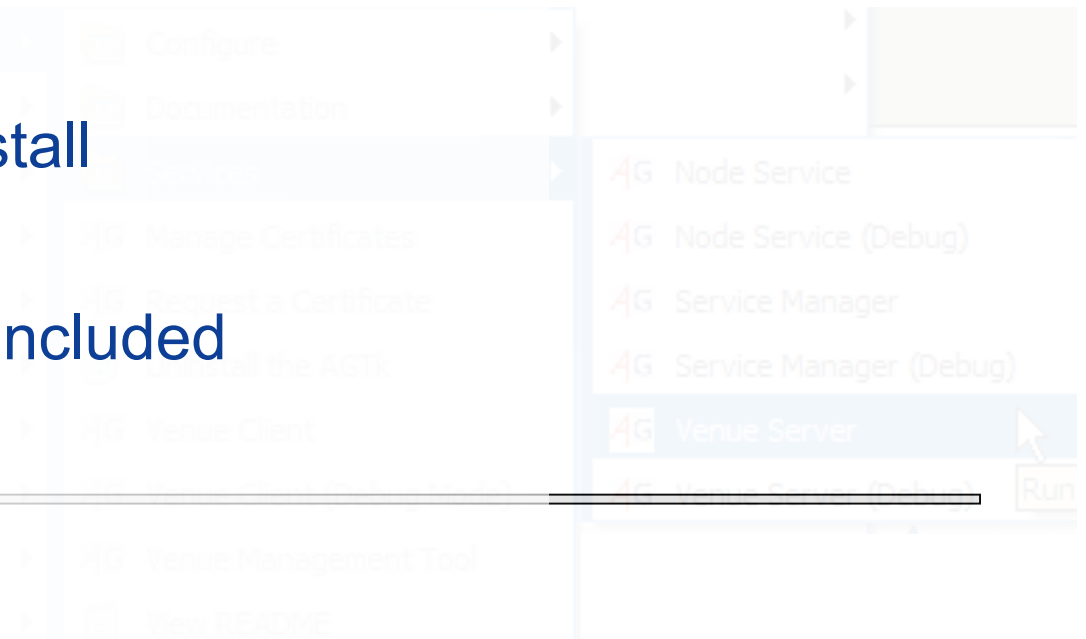
AG2

- VenueClient
  - Integrated data sharing
  - Integrated text messaging
  - Integrated event messaging
  - Shared Applications
- Encrypted audio/video
- Extensible media framework
- Certificate Management
  - CA certificate import
- Authorization
- Integrated Multicast Bridging
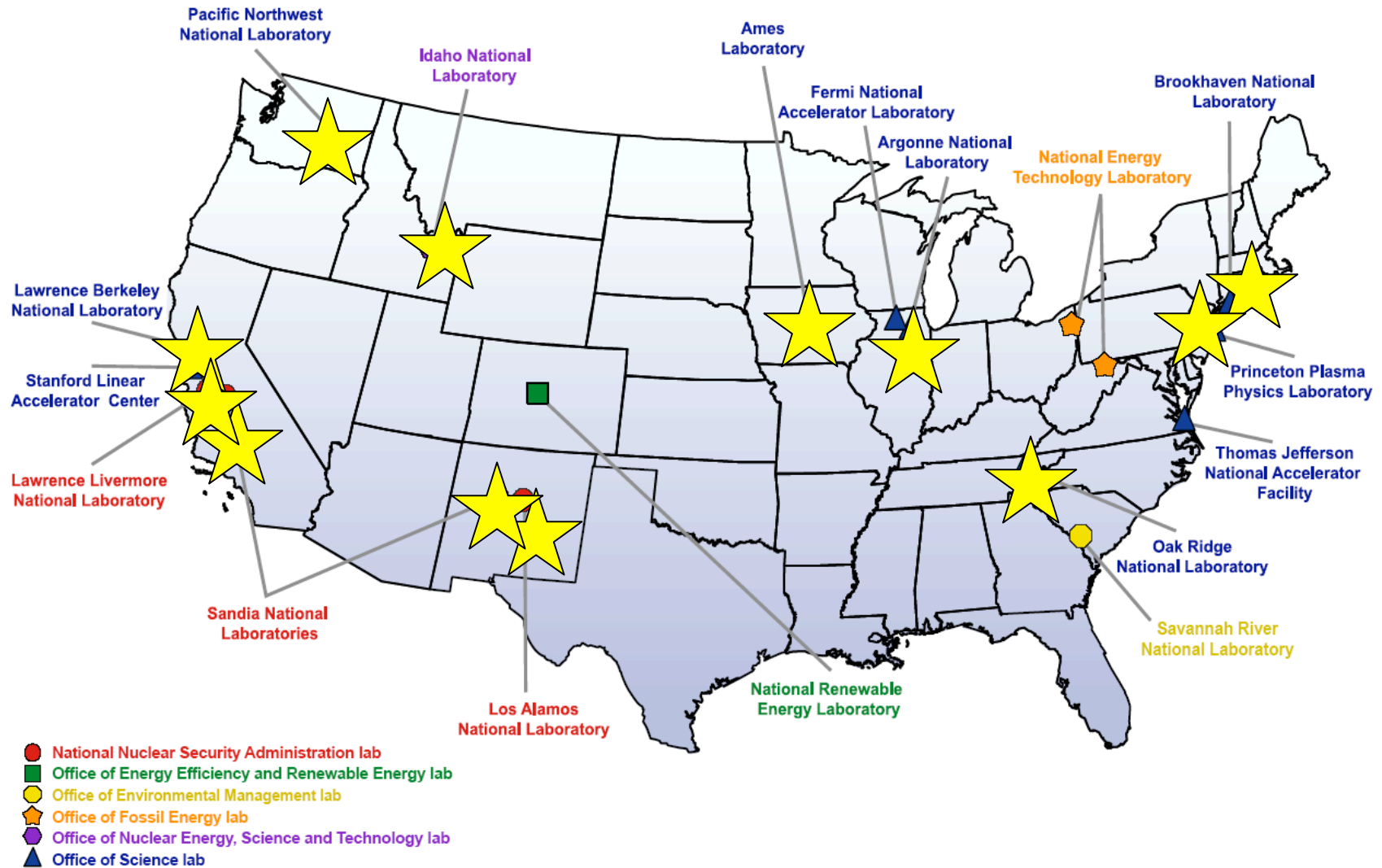- Complete documentation

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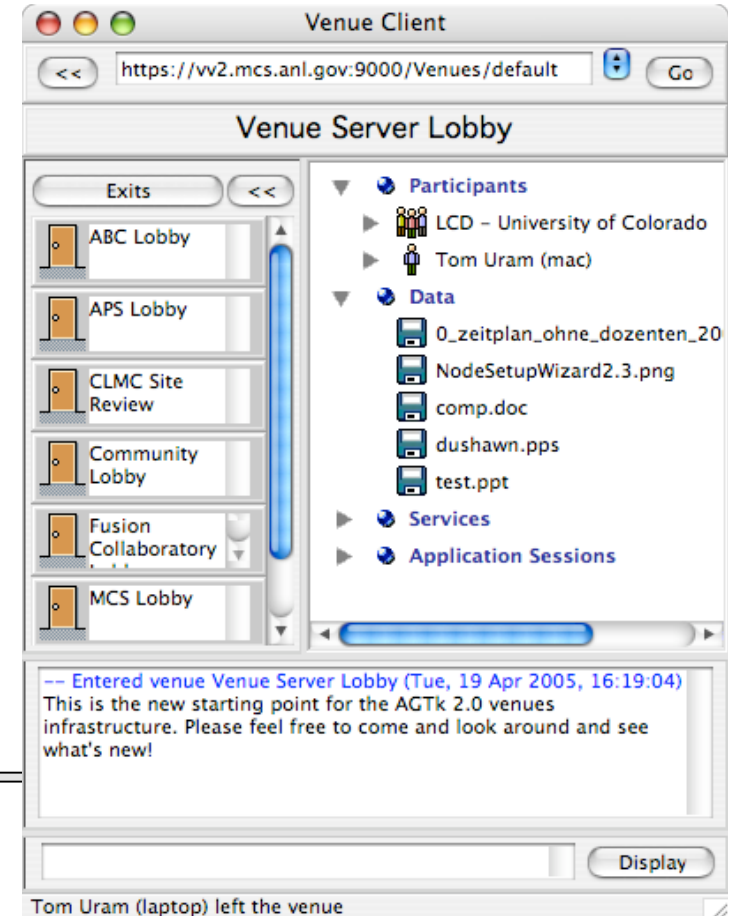
Results

- Downloads
  - 6000+ (outside Argonne)
- Certificates
  - 8000+ certificate requests
  - 53 countries
- Venue Servers
  - 10+ external to Argonne
  - Run by large organizations, small collaborations
- Platforms
  - Windows, OSX, Linux (Gentoo, Slackware, FedoraCore, FreeBSD, RedHat, SuSE)
- Large deployer of Globus software

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Worldwide AG Nodes
(the subset registered with portal)

Deploying projects

Communities

- accessgrid.org

- Asia-Pacific Access Grid

- Access Grid Canada

- Access Grid Korea

- EuroAG

  - 80+ nodes in UK

Deploying projects

Science domains

- Advanced Photon Source
  - Enable remote researchers to participate in experiments

- National Fusion Collaboratory
  - Communications among control room staff and with remote researchers
  - 100+ personal nodes

- TeraGrid
  - Multiple weekly meetings involving 10+ sites, each with multiple participants

- HPC Europa

Deploying projects

- Science domains (cont'd)
  - WestGrid
    - 80+ personal nodes
  - UC ASCI Flash Center
  - LEAD Project
    - Weekly meeting with 10+ sites
  - Advanced Biomedical Collaboratory
    - In-hospital and intra-hospital collaboration

Development Toolkit

- SOAP-based components throughout
  - VenueServer, Venue, etc.
- Published API
  - Query Venue multicast addresses for building gateway
- Shared Applications
- Node Services

Simple Development
Get multicast addresses for an Access Grid Venue

```python
#!/usr/bin/python2
import sys
from AccessGrid.Toolkit import CmdlineApplication
from AccessGrid.Venue import VenueIW

# Create and initialize application
app = CmdlineApplication()
app.Initialize('GetStreams')

# Create venue interface wrapper
venue = VenueIW(sys.argv[1])

# Get clients from venue and process
streamList = venue.GetStreams()
for stream in streamList:
    print stream
```

Third-party development

- AGSchedule, NCSA
  - Click to join meeting

    Venue: Optiverse
    Launch Now!

- Video Presence, ANU
- rcbridge, ANU
- AGDeviceControl, ANU
- MPEG4 support, NCHC (Taiwan)
- SharedDesktop, WestGrid
- SharedVizServer, WestGrid
- Venue Customizer, WestGrid/SFU

- Positional audio,BostonU
- AGJuggler, Purdue Univ.
- AGConnector, KISTI/GIST
- HD/DV support, KISTI/GIST
- OSX vic port, UQueensland
- MLB (whiteboard) integration, UQ
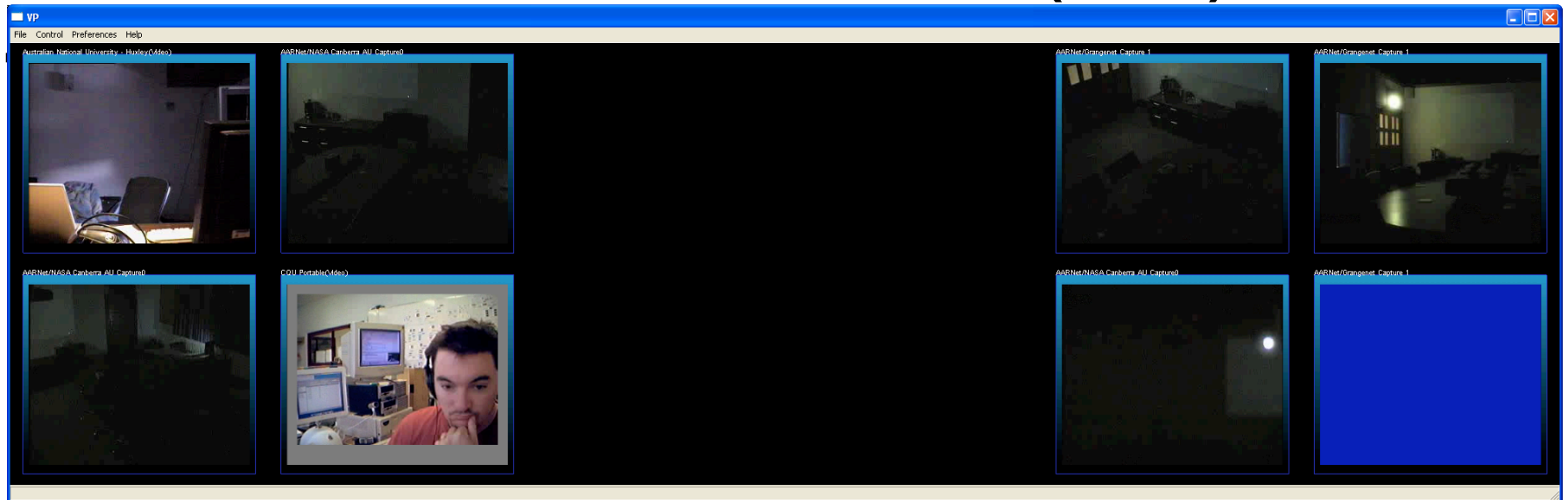- Screen streaming; meeting recorder, Manchester University (UK)

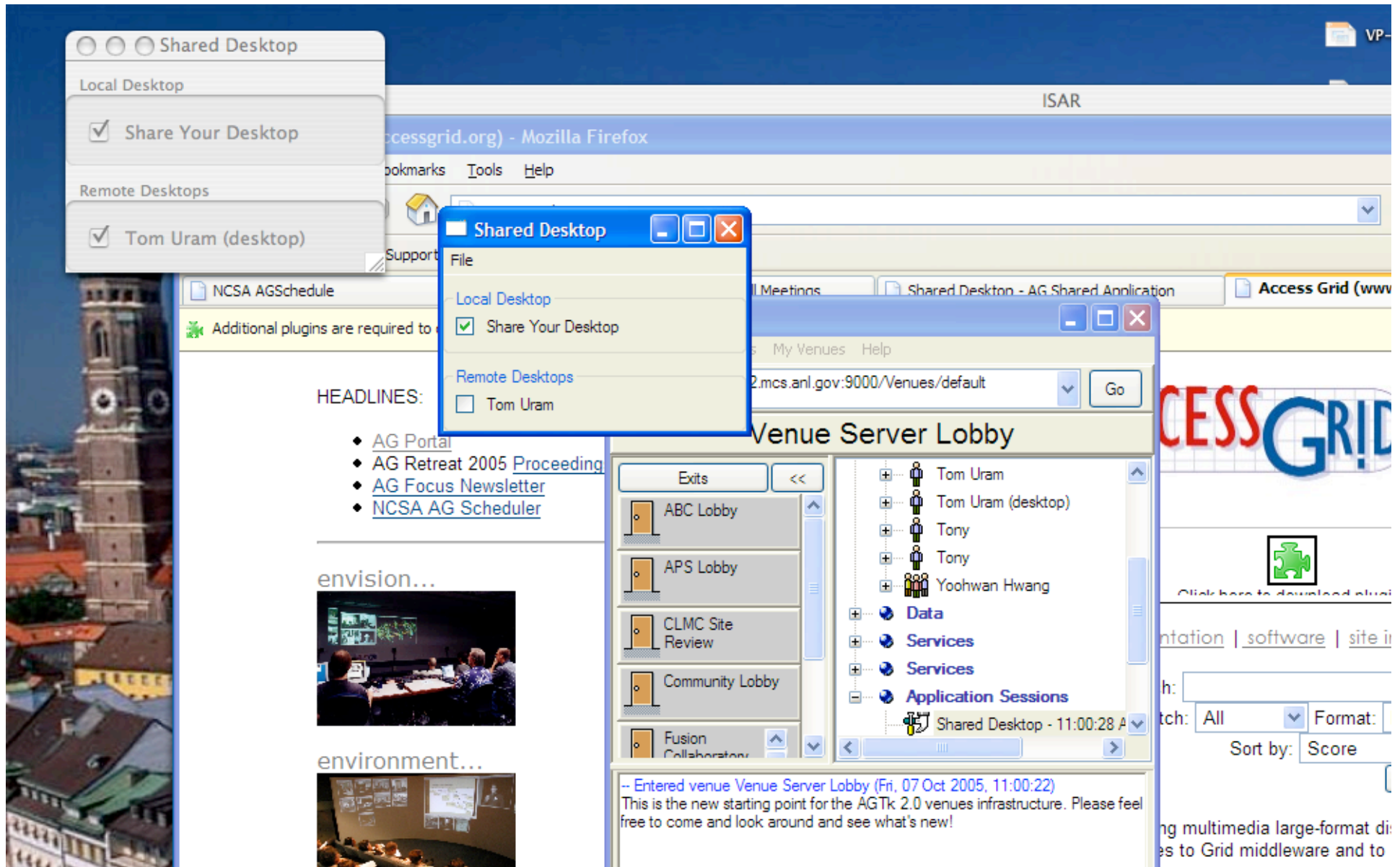FUTURESLAB

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MPEG4

Video Presence (VP)
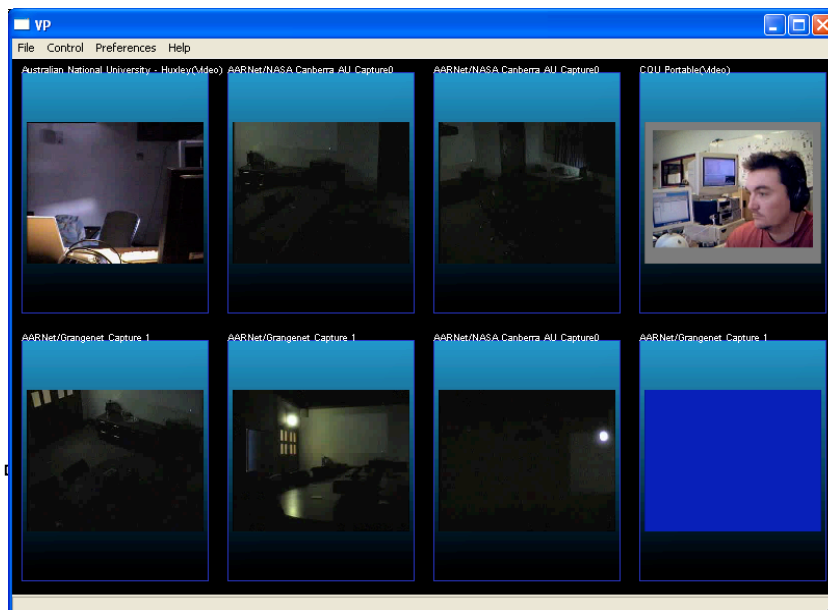
SharedDesktop

AG3

- Standards-based
  - Proven tools and protocols
  - Improved stability
  - Interoperability
  - Improved performance
  - Platform independence
  - Ease developer integration

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AG3

- SOAP/WSDL
  - Interoperability
  - Facilitates client development
- XML Event distribution
- Integrated Jabber-based text chat
  - Established standard
  - Interoperability with large Jabber client base
- Integrated FTPS data storage
  - Stability of established standard
- Certificates optional
  - Lower cost of entry

AG3

- Improve user experience
  - Persistent user preferences
  - Automatic configuration and repair
- Network monitoring
  - Integrated per-Venue multicast beacon
  - Automatic fallover to unicast bridge
- Next-generation multicast bridging
  - Easier firewall handling

More information

- Upcoming events
  - Access Grid Retreat
    - May 2006, Ann Arbor, MI
- Access Grid home page
  - www.accessgrid.org
- Access Grid portal
  - portal.accessgrid.org

Acknowledgments

- Department of Energy
  - Core AccessGrid Toolkit

- National Science Foundation
  - Network Services

- FusionGrid
  - AccessGrid OSX port